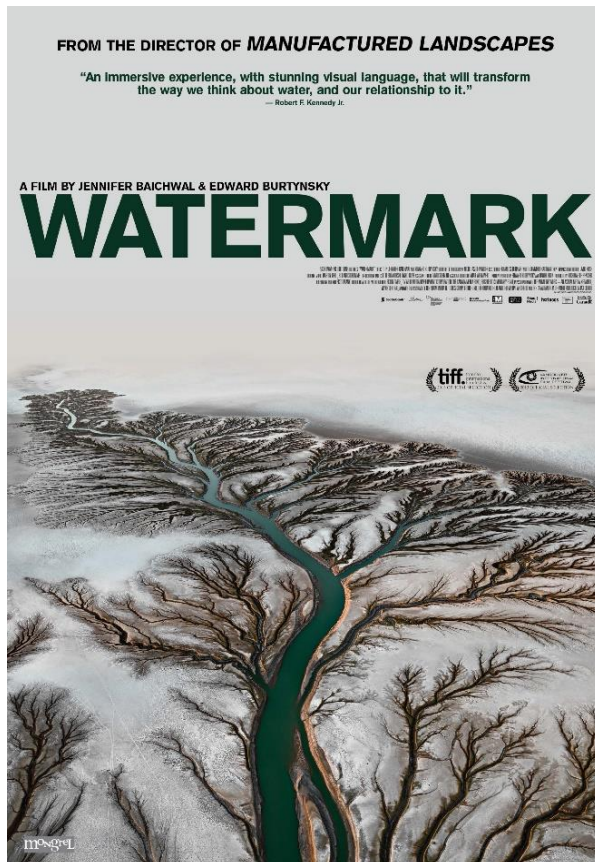


# W A T E R M A R K

WORLDVIEW Resource Guide 2019 | Wexner Center for the Arts School Program

“How does water shape us and how do we shape water?”



*Watermark* (2013) is a feature documentary from multiple-award winning filmmakers Jennifer Baichwal and Nick de Pencier, and renowned photographer Edward Burtynsky, marking their second collaboration after *Manufactured Landscapes* in 2006.

The film brings together diverse stories from around the globe about our relationship with water: how we are drawn to it, what we learn from it, how we use it and the consequences of that use. We see massive floating abalone farms off China’s Fujian coast and the construction site of the biggest arch dam in the world – the Xiluodu, six times the size of the Hoover.

We visit the barren desert delta where the mighty Colorado River no longer reaches the ocean, and the water-intensive leather

tanneries of Dhaka. We witness how humans are drawn to water, from the U.S. Open of Surfing in Huntington Beach to the Kumbh Mela in Allahabad, where thirty million people gather for a sacred bath in the Ganges at the same time. We speak with scientists who drill ice cores two kilometers deep into the Greenland Ice Sheet and explore the sublime pristine watershed of Northern British Columbia. Shot in stunning 5K ultra high-definition video and full of soaring aerial perspectives, this film shows water as a terraforming element, as well as the magnitude of our need and use. In *Watermark*, the viewer is immersed in a magnificent force of nature that we all too often take for granted- until it’s gone.

## About the Film

Every living thing requires water. We humans interact with it in a myriad of ways, numerous times a day. But how often do we consider the complexity of that interaction? And, unless confronted by scarcity, when do we meditate on its ubiquity in creating, sustaining and enriching life?

Watermark is a feature documentary film that brings together diverse stories from around the globe about our relationship with water: how we are drawn to it, what we learn from it, how we use it and the consequences of that use. We see massive floating abalone farms off China's Fujian coast and the construction site of the biggest arch dam in the world – the Xiluodu, six times the size of the Hoover. We visit the barren desert delta where the mighty Colorado River no longer reaches the ocean, and the water-intensive leather tanneries of Dhaka.

We witness how humans are drawn to water, from the U.S. Open of Surfing in Huntington Beach to the Kumbh Mela in Allahabad, where thirty million people gather for a sacred bath in the Ganges at the same time. We speak with scientists who drill ice cores two kilometers deep into the Greenland Ice Sheet, and roam the sublime pristine watersheds of Northern British Columbia.

Shot in stunning 5K ultra high-definition video and full of soaring aerial perspectives, this film shows water as a terraforming element and the scale of its reach, as well as the magnitude of our need and use. This is balanced by forays into the particular: a haunting memory of a stolen river, a mysterious figure roaming ancient rice terraces, the crucial data hidden in a million-year-old piece of ice, a pilgrim's private ritual among thousands of others at the water's edge.



## About the Filmmakers



**Edward Burtynsky** (b. 1955) is known as one of the world's most respected photographers. His remarkable photographic depictions of global industrial landscapes are included in the collections of over sixty major museums around the world, including the National Gallery of Canada, the Museum of Modern Art, the Guggenheim Museum in New York, the Reina Sofia Museum in Madrid, and the Los Angeles County Museum of Art in California. His imagery explores the collective impact we as a species are having on the surface of the planet; an inspection of the human systems we've imposed onto natural landscapes.

In an effort to expose the human effect on the earth's landscape, Burtynsky states in regard to his artwork: "Nature transformed through industry is a predominant theme in my work. I set course to intersect with a contemporary view of the great ages of man; from stone, to minerals, oil, transportation, silicon, and so on. To make these ideas visible I search for subjects that are rich in detail and scale yet open in their meaning. Recycling yards, mine tailings, quarries and refineries are all places that are outside of our normal experience, yet we partake of their output on a daily basis.

These images are meant as metaphors to the dilemma of our modern existence; they search for a dialogue between attraction and repulsion, seduction and fear. We are drawn by desire - a chance at good living, yet we are consciously or unconsciously aware that the world is suffering for our success. Our dependence on nature to provide the materials for our consumption and our concern for the health of our planet sets us into an uneasy contradiction. For me, these images function as reflecting pools of our times."<sup>1</sup>

Artist Website | [Edward Burtynsky](#)

Related Exhibitions: *WATER* and *MELTDOWN*

[Meltdown, A Visualization of Climate Change](#)

[Cleveland Museum of Art](#) & ([Kunst Haus Wien Museum 2017](#))

[Flowers Gallery](#)

[Financial Times](#)

[Lens Scratch](#)

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<sup>1</sup> Edward Burtynsky's [Artist Statement](#).



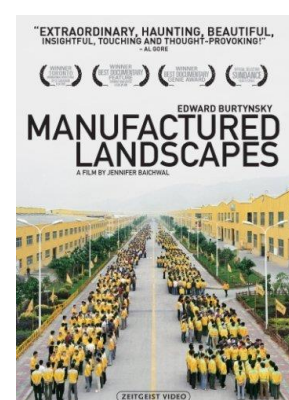
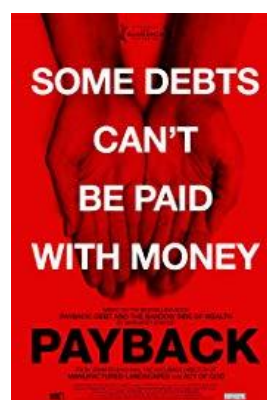
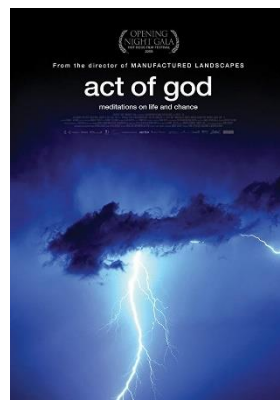
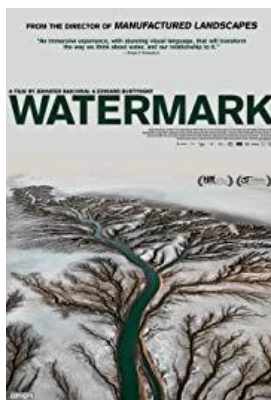
**Jennifer Baichwal** (b. 1965) has been directing and producing documentaries for over 20 years. Her films have played all over the world and won multiple awards nationally and internationally, including an International Emmy, 3 Gemini Awards, and Best Cultural and Best Independent Canadian Documentary at Hot Docs, for features such as *Let It Come Down: The Life of Paul Bowles*, *The Holier It Gets*, *Act of God*, and *Payback*. She has been a Director of the Board of the Toronto International Film Festival since 2016 and is a passionate ambassador of their Share Her Journey campaign, a five-year commitment to increasing participation, skills, and opportunities for women behind and in front of the camera.

After completing her master's at McGill, Baichwal decided to pursue documentary film work as she found that it provided her the right avenue to explore the questions and issues that she had studied in her program. Baichwal on her career choice: "I wanted to explore these questions of the human condition, but in a medium that was more lateral and more emotionally accessible than an academic paper. She has stated that the documentary "allows you to reflect on ... things that are happening in the real world in a way that is creative". Her films often attempt to investigate problems within documentary film form.

Canadian native, Baichwal is married to fellow documentary director Nicholas de Pencier and has collaborated with Burtynsky on two other films prior to *Anthropocene*.

Artist Website | [Mercy Films Inc.](#)

Mercy Films Inc. | [Summary of Past Films](#)





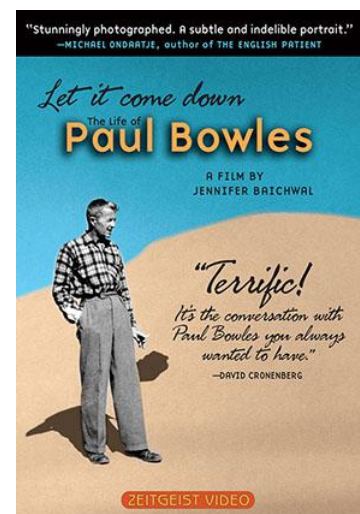
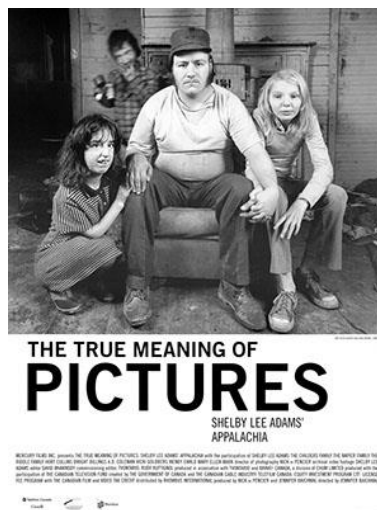
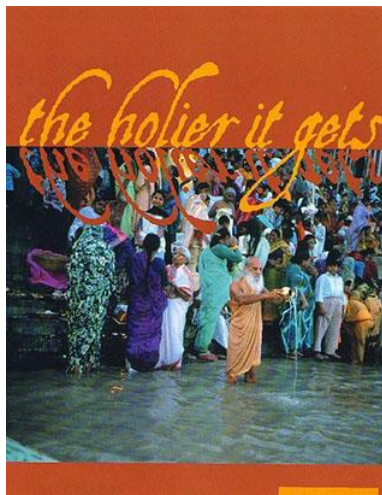
**Nicholas De Pencier** is a Director, Producer, and Director of Photography working in documentary and video installation. He is President of Mercury Films Inc., the Toronto-based production company he shares with his partner, Jennifer Baichwal.

As both producer and director of photography his credits include the feature documentary *Let It Come Down: The Life of Paul Bowles* which was nominated for a Genie, a Rockie, and won the International Emmy Award for Best Arts Documentary. *The Holier It Gets*, a documentary filmed in Canada and India, won Best Cultural and Best Independent Canadian Documentary at Hot Docs, 2000, and won Geminis for best writing, editing, and direction in a documentary series, as well as a nomination for The

Donald Brittain award for best documentary and a Chalmers Award nomination.

Selected credits include *Let It Come Down: The Life of Paul Bowles* (International Emmy), *The Holier It Gets*, (Best Canadian Doc, Hot Docs), *The True Meaning of Pictures* (Gemini, Best Arts), *Hockey Nomad* (Gemini, Best Sports), *Manufactured Landscapes*, (TIFF Best Canadian Feature; Genie, Best Doc), and *Act of God* (Gala Opening Night, Hot Docs). He was the Producer and Director of Photography of *Watermark*, (Special Presentation, TIFF & Berlin, Toronto Film Critics Award, Best Canadian Film, CSA Best Documentary), and *Black Code* (TIFF 2016), which he also wrote and directed.

Artist Website | [Mercy Films Inc.](http://MercyFilmsInc.com)



## Articles & Videos

### New York Times | [“That Bend in the River Might be Manufactured”](#)

“Driven by the question “How does water shape us, and then how do we shape water?,” Ms. Baichwal and Mr. Burtynsky, a photographer noted for his large-scale industrial panoramas, travel across 10 countries and countless human activities, seeking an answer. From the denatured Colorado River delta to abalone fisheries along China’s Fujian coast, the filmmakers find a species in thrall to H<sub>2</sub>O and largely heedless of the consequences of its unnatural manipulation. What those might be is not this film’s primary concern. Always arresting and sometimes troubling, “Watermark” — aside from the odd comment here and there — neither lectures nor argues.”

### Variety Magazine | [“Film Review: Watermark”](#)

“Considering how radically photographer Edward Burtynsky has already transformed the way we view man’s impact on his home planet, one might reasonably ask what the Canadian artist could possibly do to advance his already eco-conscious oeuvre. Turns out the answer couldn’t be simpler: Just add water. In “Watermark,” Burtynsky reteams with “Manufactured Landscapes” director Jennifer Baichwal, stepping up to co-direct this massively ambitious, visually arresting survey of all things aquatic. Expanding the alternately hypnotic and horrifying quality of Burtynsky’s photographic work to the big screen, this more avant-garde collaboration isn’t just a portrait of the artist, but a bona fide art film.”

### VICE News | [Making of Watermark](#)

“While the scale of such a project seemed impossible to trump, Baichwal and de Pencier have followed-up with *Watermark*, a second feature that follows Burtynsky as he embarks to capture "existential interactions around the world with water" as massive panoramas of the most diverse bodies of water on Earth.

The scale is due, in no small part, to the use of helicopters and quadcopters to film high above, but also rendered up-close-and-personal through the most high-tech hi-def lenses and gear. Painting the earth like a grand canvas, the work provides a platform for art that otherwise can't fit inside a gallery space.”

### The Creators Project | [An Immersive Look at Water](#) (video)

“Photographer Edward Burtynsky and director Jennifer Baichwal give us an inside look into the making of their cinematic feat, *Watermark*. The documentary was shot using groundbreaking 5K ultra high definition photography and aerial technology and explores mankind's complicated

relationship with water, using a diverse set of stories that challenge how easily we take it for granted.”

Mercury Films | [Four Things You Didn't Know About Edward Burtynsky](#) (video)

Watch more of Burtynsky's incomparable vistas from *Watermark* in this behind the scenes featurette—you'll never see water the same way again.

### Key Terms

- **aqueduct:** an artificial channel for conveying water, typically in the form of a bridge across a valley or other gap; also known as a channel, waterway, or spillway
- **aquifer:** a body of permeable rock which can contain and transmit groundwater
- **biodiversity:** the variety of life in the world or in a particular habitat or ecosystem
- **canal:** an artificial waterway constructed to allow the passage of boats or ships inland or to convey water for irrigation; also known as a channel or waterway
- **displaced person:** someone forced to leave their home, typically because of war, persecution, or natural disaster
- **delta:** a nearly flat plain of alluvial deposit between diverging branches of the mouth of a river, often, though not necessarily, triangular
- **dyke:** (or dike) in geological terms is a type of sheet rock that is formed in a fracture in pre-existing rock body; dikes are often magmatic or sedimentary in origin
- **environmentalist:** a person who is concerned with or advocates the protection of the environment; a person who considers that environment, as opposed to heredity, has the primary influence on the development of a person or group.
- **glacier:** a persistent body of dense ice that is constantly moving under its own weight; 99% of the Earth's glaciers are found in the polar region in ice sheets.
- **groundwater:** the water present beneath Earth's surface in soil pore spaces and in the fractures of rock formations



Photo of an Igneous dike.

- **ice cap:** an ice cap is a mass of ice that covers a land area—thinner ice masses are called ice sheets
- **ice sheet:** is a mass of glacial land ice extending more than 50k square kilometers; two ice sheets on Earth today cover most Greenland and Antarctica; during the ice age the ice sheets covered much of North America and Scandinavia
- **ice shelf:** a thick suspended platform of ice that forms where a glacier or ice sheet flows down to a coastline and onto the ocean surface
- **lakebed:** the floor or bottom of a lake

- **monsoon:** is traditionally defined as a seasonal reversing wind accompanied by corresponding changes in precipitation, but is now used to describe seasonal changes in atmospheric circulation and precipitation associated with the asymmetric heating of land and sea



Photo of an ice shelf.

- **natural habitat:** an ecological or environmental area where a specific species lives
- **reservoir:** an enlarged natural or artificial lake, pond or impoundment created using a dam or lock to store water; reservoirs can be created in number of ways, including controlling a watercourse that drains an existing body of water, interrupting a watercourse to form an embayment within it, through excavation, or building any number of retaining walls or levees.
- **topography:** the arrangement of the natural or an artificial physical feature of an area; a detailed description or representation on a map of the natural and artificial features of an area.
- **waterfront:** a part of town that borders a body of water



**Places Visited in the Film****COLORADO RIVER, U.S.A.**

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The Colorado River is one of the principal rivers in the southwestern United States and northern Mexico. Due to large engineering working in the 20<sup>th</sup> century, the Colorado River is one of the most controlled and litigated rivers in the world. However due to overuse, climate change, and poor planning and management the Colorado River no longer extends to the ocean as it once did.

**Smithsonian | [The Colorado River Runs Dry](#)**

“The damming and diverting of the Colorado, the nation’s seventh-longest river, may be seen by some as a triumph of engineering and by others as a crime against nature, but there are ominous new twists. The river has been running especially low for the past decade, as drought has gripped the Southwest. It still tumbles through the Grand Canyon, much to the delight of rafters and other visitors. And boaters still roar across Nevada and Arizona’s Lake Mead, 110 miles long and formed by the Hoover Dam. But at the lake’s edge they can see lines in the rock walls, distinct as bathtub rings, showing the water level far lower than it once was—some 130 feet lower, as it happens, since 2000. Water resource officials say some of the reservoirs fed by the river will never be full again.”

**Yale Environment360** | [The West's Great River Hits Its Limits: Will the Colorado Run Dry?](#)

“Some scientists believe a long-term aridification driven by climate change may be taking place, a permanent drying of the West. [...]

The era of tapping the Colorado River, though, is coming to a close. This muddy river is one of the most contentious in the country—and growing more so by the day. It serves some 40 million people, and far more of its water is promised to the users than flows between its banks—even in the best water years. And millions more people are projected to be added to the population served by the Colorado River by 2050.”

**Western Resource Advocates** | [Three Reasons the Colorado River Could Dry Up](#)

“The mighty Colorado River has been called the backbone of the West for good reason. Nearly 40 million people across seven U.S. states and in Mexico depend on the river for drinking water. Over 5 million acres of farmland are irrigated by the river, which grows virtually all of the U.S.’s winter vegetables. And for wildlife, including 30 endemic fish species and millions of birds, the river is essential for survival.

Tapped to meet the growing demands of western communities, the Colorado River already dries up before reaching its natural outlet to the ocean. But ever-increasing water usage, coupled with drought and climate change, mean that the majestic river’s flow will fall to even more dangerously low levels—if we don’t change the way we use water.”

## OGALLALA AQUIFER, U.S.A.



The Ogallala Aquifer (oh-guh-lah-luh) is a shallow water table aquifer surrounded by sand, silt, clay and gravel located beneath the Great Plains in the United States. One of the world’s largest aquifers, it underlies an area of approximately 174k square miles in portions of eight states—including South Dakota, Nebraska, Wyoming, Colorado, Kansas, Oklahoma, New Mexico, and Texas.

National Science Foundation | [The Ogallala Aquifer](#) (PBS video)

National Geographic | [What Happens to the U.S. Midwest when the Water Runs Out?](#)

“The draining of North America’s largest aquifer is playing out in similar ways across the world, as large groundwater basins in Asia, Africa, and the Middle East decline rapidly. Many of these aquifers, including the southern Ogallala, have little ability to recharge. Once their water is gone, they could take thousands of years to refill.”

Climate.gov | [National Climate Assessment: Great Plains’ Ogallala Aquifer Drying Out](#)

“The Ogallala Aquifer underlies parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming. From wheat and cows to corn and cotton, the regional economy depends almost exclusively on agriculture irrigated by Ogallala groundwater. But according to the *Fourth National Climate Assessment (NCA4)*, producers are extracting water faster than it is being replenished, which means that parts of the Ogallala Aquifer should be considered a nonrenewable resource.”

## ALL-AMERICAN CANAL, MEXICO & U.S.A.

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“The All-American Canal runs west from the Imperial Dam on the Colorado River and roughly parallels the international Mexico border, giving it its name. The canal supplies about a 3.1 million acre-feet each year to nine cities and 500,000 agricultural acres. The canal—finished in 1940—can be credited for much of the Imperial Valley’s agricultural success.”

Though the canal was recently honored as a landmark, recent media coverage surrounding the structure has focused on the drowning of migrants and American Border Patrol.

**CBS News** | [All-American Canal and Immigrants](#) (video)

**60 Minutes** | [The Deadly Passage of the All-American Canal](#)

“This is one small subset of the American canal. Each pushpin represents a person who drowned in this particular location,” Hunter added, showing Pelley an online map with virtual pushpins. Asked how many pushpins - each representing a victim - there are, Hunter said, “There’s over 550 victims and those are the ones we know of.”

While the canal is a deathtrap, it is also a lifeline for the nation. It flows the length of 85 miles just north of California's border with Mexico, transporting water from the Colorado River to the

Imperial Valley. Two thirds of our winter fruits and vegetables are grown with this water. But half of the people who pick those crops are illegal immigrants.

To get the jobs created by the canal, they cross the canal, usually at night, on makeshift rafts or using plastic jugs for flotation. The water is 225 feet across, 20 feet deep, with few rescue lines or climb-out ladders, safety devices that you would find in some other canals.

The All-American is owned by the federal government but its management is controlled by a regional authority called the Imperial Irrigation District. And for ten years, Hunter has been lobbying the elected members of the Irrigation District to add safety features.

They've taken votes, commissioned studies, but done almost nothing.”

## DISCOVERY BAY, CALIFORNIA – MANMADE WATERFRONT

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Discovery Bay, California is a region of the San Francisco Bay Area with a population of 13,000 people. Planned in 1964, Discovery Bay was originally planned as a waterfront community built on a network of man-made dikes, surrounded by fresh water.

National Oceanic and Atmospheric Administration | [Waterfront Challenges and Opportunities](#)

National Working Waterfront Network | [The Future of Working Waterfronts](#)

“This website contains lots of information, data, and tools that individuals, communities, and governments at all levels can use to develop, inform, and enhance their sustainable working waterfront initiatives.

The nations’ approximately 360 commercial sea and river ports move a variety of cargoes between domestic and overseas markets. [...] Working waterfronts support local businesses, provide jobs and attract visitors.

Today, many working waterfronts are undergoing transition as some traditional water-dependent activities have contracted in size and demographic and economic trends bring higher land values and development pressure to convert working waterfronts to other land uses, particularly residential. While diversifying land uses can help revitalize a community’s waterfront, attention to the amount and compatibility of non-water-dependent uses and retaining access is essential to long-term success of this strategy.”

## HUNTINGTON BEACH, CALIFORNIA

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Huntington Beach is bordered by the Pacific Ocean on the west and has been long known for its 9.5-mile-long beach, mild Mediterranean climate, and excellent surfing, earning it the nickname “Surf City”. Huntington Beach hold the U.S. Open of Surfing and is a top location for AVP beach volleyball tour. The area also holds Surf City Nights—a community-spirited event that features a farmer’s market, unique entertainment, food, and carnival atmosphere. Unfortunately, Huntington Beach like many other southern California and Bay area towns are in danger of sea level rise and brutal heat spells.

**Los Angeles Times** | [“Climate Change Will be Deadlier, More Destructive and costlier for California than Previously Believed”](#)

“Heat waves will grow more severe and persistent, shortening the lives of thousands of Californians. Wildfires will burn more of the state’s forests. The ocean will rise higher and faster, exposing California to billions in damage along the coast. These are some of the threats California will face from climate change in coming decades, according to a new statewide assessment released Monday by the California Natural Resources Agency. The projections come as Californians contend with destructive wildfires, brutal heat spells and record ocean temperatures that scientists say have the fingerprints of global warming.”

**Scientific American** | [Sea Level Rise Will Threaten Thousands of California Homes by 2035](#)

To deal with current flooding, the city is adding a 9-inch topper to an aging sea wall as a short-term fix. The longer-term plan under development is essentially to lift the island. Homes, streets and sea walls would be raised. It's controversial, as homeowners would have to pay for their own work. 'We're going to be seeing these kinds of conversations play out in hundreds of communities in the coming decades as more and more places start to face these challenges,' Dahl says. The city of Del Mar, north of San Diego, recently passed a sea-level rise adaptation plan that rejected managed retreat or removing homes in the ocean's way as it rises. That came following heavy pressure from residents. The city is at high risk for flooding later this century."

**Orange County Register** | [Scientists Predict Parts of Southern California Could Face Chronic Flooding from Rising Sea Levels](#)

"The non-profit Union of Concerned Scientists released a report and interactive tool Wednesday that forecasts what parts of the country are likely to see regular flooding from rising oceans and how soon. 'To my knowledge this is the first that explicitly does it by time increments and drills down by community level to see how much land is at risk,' said Kristina Dahl, a climate scientist with the group who co-authored the report. 'We wanted to develop a tool to give communities an idea of how much time they have.' Among the communities projected to experience frequent flooding by 2030 are northern parts of Huntington Beach...[.]"



## BANGLADESH – DHAKA LEATHER TANNERIES

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“Leather industry is a major industry in Bangladesh. It plays a large role in the country’s employment; however, Human Right Watch reported that it is responsible for pollution of air, water, and soil, that lends to serious health problems in the population—it is also known to be involved in child labor. The first tannery in Bangladesh opened in the 1940s, and the industry has significantly developed since then.” This level of production has taken its toll on both the environment and the health of the region’s people.

### **Pulitzer Center** | [“Bangladesh: Toxic Tanneries”](#)

Driving through the congested streets of Dhaka, we could smell Hazaribagh before we reached it. The neighborhood in the heart of Dhaka is home to about 150 leather tanneries and footwear factories and is, by many accounts, one of the most intensely polluted places on the planet.

The stench of the place smacked us in the face: rotting animal flesh, garbage, raw sewage, auto exhaust and acrid chemicals mingled together in a nauseating stew. I wondered how people could work in this place without gagging, until, after a few minutes, I realized that I didn't smell anything, any more. It is remarkable how quickly the senses adapt.

**PBS News Hour** | [Bangladesh Leather Industry Exposes Workers to Toxic Hazards](#) (video)

“Rotting animal hides and toxic chemicals. That’s the stench emanating from a neighborhood in Bangladesh’s capital, where hundreds of leather tanneries are packed into two square miles and workers, toiling away under horrific conditions, don’t know the full danger they face.”

**Wired** | ["Inside Bangladesh’s Polluted, Billion-Dollar Leather Industry"](#)

“The neighborhood of Hazaribagh runs along the bank of the Buriganga River as it flows through Dhaka, the capital of Bangladesh. Its name means "a thousand gardens" in Urdu, but you won't see much green. Instead, the streets are lined with mounds and mounds of leather.

Hazaribagh is home to the country's \$1 billion tanning industry, a place where thousands work in the factories and chemicals makes the river slick and shiny. Everything revolves around the tanneries. "The village itself is kind of a giant factory," says photographer Adib Chowdhury, who spent two weeks there last year. His cinematic photos in *\*A Thousand Polluted Gardens\** brim with rich, colorful tones that belie the grim scenes. More than 150 tanneries have covered 50 acres in the past 60 years. They use chromium salts, acids and other toxins to treat hides that go on to China, India and beyond, sending some 762,796 cubic feet of wastewater flowing into the Buriganga [River].”

**Reuters** | [“Bangladesh River Pollution Threatens Millions”](#)

“It was once the lifeline of the Bangladeshi capital. But the once mighty Buriganga River, which flows by Dhaka, is now one of the most polluted rivers in Bangladesh because of rampant dumping of industrial and human waste. [...] Chemicals such as cadmium and chromium, and other elements such as mercury carried by the industrial waste are also creeping into the ground water, posing a serious threat to public health.”

## INDIA – KUMBH MELA in the GANGES



“The Kumbh Mela is a mass Hindu Pilgrimage of faith in which Hindus gather to bathe in a sacred or holy river. Traditionally, four fairs are widely recognized as the Kumbh Melas and they are held at four locations. Bathing in these river locations is thought to cleanse a person of all their sins. [...] The festival is the largest peaceful gathering in the world. In 2013, an estimated 120million people visited.”

**Kumbh.gov** | [Official Kumbh Mela Site](#)

“Organising any event entails a massive marketing campaign, promotional activities, and sending invitations to guests. The Kumbh Mela is perhaps the only event in the world where no invitation is required yet millions of pilgrims gather to celebrate the holy event.

Apart from its primary bathing rituals, the social aspect of the festival also revolves around the various Yajnas, the chanting of Vedic Mantras, holy elucidations, traditional dances, devotional songs, programs based on mythical stories, and prayers. Religious assemblies are held where doctrines are debated, standardized and conducted by renowned saints and sages. A prominent part

of the festival is the act of donations to the poor and helpless, to the saints, and to cows. Donations range from basic food and clothing to even precious metals.

The welfare of all beings, sharing of noble thoughts and maintaining good relationships with all the beings across the world is the core message prevalent during the Kumbh festival. Kumbh has been spiritually uniting the people of India and across the world since time immemorial and will continue doing so for years to come.”

**BBC Earth** | [Toxic Waste in the Ganges River](#)

“Simon Reeves looks at the dangerous levels of pollution in the Ganges River.”

**UNESCO** | [Kumbh Mela](#) (video)

**Reuters** | [Saving A River: Pollution in India’s Holy Ganges Makes it Toxic](#)

“The Ganges river, holy to most Indians, flows from the western Himalayas down to the Bay of Bengal through crowded cities, industrial hubs and some of the most populated areas in the world.

The river begins as pristine, clear waters in the icy heights of the tallest mountain range in the world. But pollution, untreated sewage and use by hundreds of millions of people transform parts of it into toxic sludge by the time it reaches the sea, about 2,525 kilometers downstream.

Personified by Hindus as the goddess Ganga, the river is the site of thousands of cremations and ash scatterings every day. The Hindu nationalist government of Prime Minister Narendra Modi has launched a nearly \$3 billion five-year plan to clean up the river by 2020, but Reuters found last year that only a tenth of the funds had been used in the first two years of the project.”

**CNN** | [Striking Photos Show a Decade of Environmental Decline Along the Ganges](#)

“The Ganges is the perfect metaphor for all the issues we’re talking about, like climate change, pollution, industrialization and rising sea (levels). [...] The Ganges’ health has become the cause of widespread concern in India. Billions of liters of sewage and industrial wastewater are pumped into the river every day.”

**BBC News** | [Ganges: The Holy Men Fasting to Death to Keep a River Alive](#)

Hindus revere the river as a god, and believe that bathing in her waters can wash away a person's sins.

But the Ganges has been choked by more than 1,000 irrigation dams, the water table in its basin shrunk by reckless extraction of groundwater and its own water poisoned by toxic industrial effluent and household sewage. The river in Haridwar itself caught fire in 1984 when someone put a lit match on the water. "Indians are killing the Ganges with pollution and the polluted Ganges, in turn, is killing Indians," says Victor Mallet, author of *River of Life, River of Death*, a new book on the river.

**World Economic Forum | [The Challenges Facing India's Most Sacred River](#)**

"The Ganges is a lifeline for the people of India, spiritually and economically. On its journey from the Himalayas to the Bay of Bengal, it supports fishermen, farmers and an abundance of wildlife.

The river and its tributaries touch the lives of roughly 500 million people. But having flowed for millennia, today it is reaching its capacity for human and industrial waste, while simultaneously being drained for agriculture and municipal use.

Here are some of the challenges the river faces."



## CHINA – FUJIAN COAST and the XILUODU DAM

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“The Xiluodu Dam is an arch dam on the Jinsha River (the upper course of the Yangtze River in China) and it creates the Xiluodu Reservoir. The primary purpose of the dam is hydroelectric power generation and is currently the third-largest power station with the fourth-tallest dam in the world”

### **The Guardian** | [Only 1/3 of the World’s Great Rivers Remain Free Flowing](#)

“The negative environmental impacts of many large dams is well known, but the international drive to fight climate change by reducing the burning of fossil fuels means low-carbon hydropower is in demand. “We are in a boom phase,” said Grill, noting that this was particularly so in the Balkans, Amazonia, China and the Himalayas.

Grill added that the broader environmental costs of hydropower were often not taken into account. He said he hoped his team’s database would enable planners to make better decisions about the necessity, location and design of dams.”

### **CNN** | [China Has Made Major Progress on Air Pollution](#)

Since 2008, China's government has expended a huge amount of energy and money in addressing the country's air quality problems. And in 2014, Chinese Premier Li

Keqiang declared a "war on pollution," which he described as "nature's red-light warning against the model of inefficient and blind development."

While China's smog issues are nowhere near solved -- the country is still home to a large number of urban hubs battling air pollution issues -- there are signs of improvement. Neighboring India, meanwhile, now has a far worse problem on its hands, with 22 of the 30 most polluted cities, according to the Greenpeace/AirVisual report.

**The Guardian** | [Pollution Watch: China Shows How Political Will Can Take on Air Pollution](#)

In four years, sulphur dioxide in the city was reduced by 70% and particle pollution by 36% by tackling the problem at source. Initially, old coal-powered industry and power stations were fitted with air pollution abatement systems before being replaced by cleaner facilities built to run on natural gas.

## THE GREENLAND ICE SHEET

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The Greenland Ice Sheet is a vast body of ice covering 1.7million square kilometers—roughly 80% of the surface of Greenland. The thickness is generally about 2 miles and is dominated by isolated glaciers and small ice caps. Increased temperature on Earth in recent decades has caused mass melting of the ice sheet; thus, raising water levels worldwide.

**Washington Post** | [The Greenland Ice Sheet Poured 197 Billion Tons of Water into North Atlantic in July Alone](#)

“An extraordinary melt event that began earlier this week continued through August 1 on the Greenland ice sheet, and there are signs that about 60 percent of the expansive ice cover saw detectable surface melting, including at higher elevations that only rarely see temperatures climb above freezing.”

**Rolling Stone** | [Greenland Is Melting Away Before Our Eyes](#)

“With a decade or two of hindsight, scientists now believe Greenland passed an important tipping point around 2003, and since then its melt rate has more than quadrupled. This week alone, Greenland will lose about 50 billion tons of ice, enough for a permanent rise in global sea levels by about 0.1mm. So far in July, the Greenland ice sheet has lost 160 billion tons of ice — enough to cover Florida in about six feet of water.”



## Discussion Themes & Questions

### Watermark | [Educational Resource](#)

“This guide has been designed to help teachers and students enrich their experience of WATERMARK by providing support in the form questions and activities. There are a range of questions that will help teachers frame discussions with their class, activities for before, during and after viewing the film, and some weblinks that provide starting points for further research and discussion.”

## Climate Change

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### IPCC | [The International Panel on Climate Change](#)

“The IPCC was created to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigations options.”

### NASA | [What is Climate Change?](#)

“The Earth's climate has changed throughout history. Just in the last 650,000 years there have been seven cycles of glacial advance and retreat, with the abrupt end of the last ice age about 7,000 years ago marking the beginning of the modern climate era — and of human civilization. Most of these climate changes are attributed to very small variations in Earth’s orbit that change the amount of solar energy our planet receives.

The current warming trend is of particular significance because most of it is extremely likely (greater than 95 percent probability) to be the result of human activity since the mid-20<sup>th</sup> century and proceeding at a rate that is unprecedented over decades to millennia.

Earth-orbiting satellites and other technological advances have enabled scientists to see the big picture, collecting many different types of information about our planet and its climate on a global scale. This body of data, collected over many years, reveals the signals of a changing climate.”

### GlobalChange.gov | [National Climate Assessments](#) (videos)

This webinar series is based on select content from the Fourth National Climate Assessment, Vol. II: Impacts, Risks, and Adaptation in the United States. It is hosted by NOAA in collaboration with the U.S. Global Change Research Program.

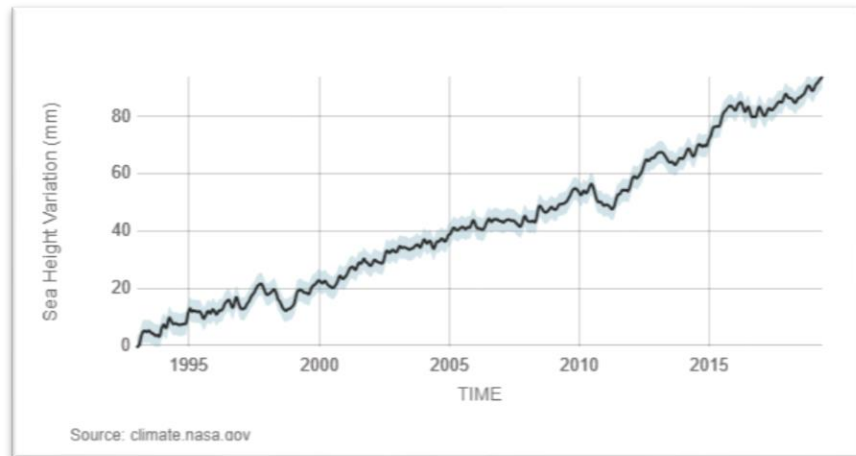
## Sea Level Rise, Flooding and Natural Disaster

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Sea level rise is caused primarily by two factors related to global warming: the added water from melting ice sheets and glaciers and the expansion of seawater as it warms. This graph tracks the change in sea level since 1993 as observed by satellites.

### [What countries have lost the most to sea level rise?](#)

1. St. Kitts and Nevis
2. Ecuador
3. Vietnam
4. Bulgaria
5. Seychelles
6. Cuba
7. Sweden
8. Iraq
9. Azerbaijan
10. Japan



### World Economic Forum | [How Significant is Global Sea Level Rise](#)

“Sea-level rise varies over location and time, and scientists have developed a range of methods to reconstruct past changes and project future ones. But despite the differing approaches, a clear story is emerging regarding the coming decades: From 2000 to 2050, global average sea-level will most likely rise about 6 to 10 inches, but is extremely unlikely to rise by more than 18 inches. A large portion of sea-level rise in the 20th century, including most of the global rise since 1975, is tied to human-caused global warming, the study says.”

### World Economic Forum | [Coastal Cities are Going Under](#)

“The warning signs are increasingly hard to ignore. Sea-level rise is real, displacing thousands of people, destroying millions of acres of land and generating billions of dollars in losses. Due to competing predictions of future global temperatures, scientists are unsure exactly how fast or high sea levels will rise. But they all agree on its principle impacts: submergence and flooding of coastal land, saltwater intrusion into surface waters and groundwater, increased erosion and overwhelmingly negative social and economic repercussions. They are also emphatic that these effects will be widespread and will accelerate with time.”

**World Economic Forum | [Sea Levels to Displace Millions within Two Generations](#)**

“Antarctica is further from civilization than any other place on Earth. The Greenland ice sheet is closer to home but around one-tenth the size of its southern sibling. Together, these two ice masses hold enough frozen water to raise global mean sea level by 65 meters if they were to suddenly melt.

The experts’ best estimate average in this case is 51cm of sea level rise caused by melting ice sheets by 2100, but with a 5% chance that global sea level rise could exceed two meters by 2100. That has the potential to displace some 200m people.

Let’s try and put this into context. The Syrian refugee crisis is estimated to have caused about a million people to migrate to Europe. This occurred over years rather than a century, giving much less time for countries to adjust. Still, sea level rise driven by migration of this size might threaten the existence of nation states and result in unimaginable stress on resources and space.”

**The Effects of Not Enough Water and Lack of Clean Water**

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**World Economic Forum | [Charging for Water and the Effect on Droughts](#)**

“Changing the incentives for water use and storage could mitigate the stress of droughts, according to new research.

Humans use water for a variety of different ends, but rivers also need water flowing through them to ensure the survival of fish and other wildlife. [...]

Andrew Plantinga, an environmental economist at the Bren School of Environmental Science & Management at the University of California, Santa Barbara, teamed up with colleagues at institutions in the Pacific Northwest to investigate water use dynamics in the Willamette River Basin. The goal was to figure out how to meet human demands on water while fulfilling the minimum flow requirements during severe droughts.”

**World Economic Forum | [Wildfires in the Arctic](#)**

“There are currently 11 wildfires blazing in the Arctic circle, The Guardian reported Wednesday. While fires are also raging in Russia, Norway and Finland, Sweden has seen the most extensive Arctic fires, which have forced four communities to evacuate, according to The Guardian.

Two Italian water-bombing planes that answered Sweden's call for help will begin operating Wednesday, but Sweden's Civil Contingencies Agency has requested even more planes and helicopters from the EU, The Local Sweden reported. ‘This is definitely the worst year in recent times for forest fires.’”

**Forbes** | [Four reasons Climate Change Impacts on Agriculture Matter to You](#)

“We need to eat, we feel the economic impact, rural communities are particularly vulnerable, and there is hope.

Climate change is too often framed as about polar bears or "far into the future impacts." If you look carefully, there are plenty of meaningful, kitchen-table issues for families related to climate change right now.”

**World Economic Forum** | [Cities Must Manage Water Better or Risk Drought](#)

“Water is a precious resource on our planet, and all life requires water to survive. Rapid urbanization has brought to acute focus a need for the intelligent management of fresh water, waste water and storm water to assure the safety of drinking water; for waste-water management and storm-water monitoring to keep urban dwelling secure; and to avoid water scarcity, public-health risks and flooding in urban areas. Recent events such as Melbourne’s Millennium drought and the crisis in Flint, Michigan illustrate not only the range of challenges faced by municipal governments, but also the universal imperative for a greater focus on water and the city. Developed and remote areas alike must be smarter about water.”

**Water.org** | [The Impact of the Water Crisis](#)

“Today, 844 million people—1 in 9—lack access to safe water and 2.3 billion people—1 out of 3—lack access to a toilet.

Women are disproportionately affected by the water crisis, as they are often responsible for collecting water. This takes time away from work, school and caring for family. The lack of water and sanitation locks women in a cycle of poverty.

Nearly 1 million people die each year from water, sanitation and hygiene-related diseases which could be reduced with access to safe water or sanitation.”

**World Economic Forum** | [Six Reasons We Need Clean Water for All](#)

“California is no stranger to droughts. However, the Sierra Nevada snow that provides essential water to the state is at a 500-year low, according to research out this week. The population of almost 39 million people is beginning to feel the pinch.

Goal six of the UN’s Sustainable Development Goals (SDGs) deals explicitly with the linked issues of water and sanitation. But some of the key issues on water are invisible. The water is either

deep underground or flowing in atmospheric rivers of moisture high in the sky. Water may be polluted with invisible chemicals, and changes to water availability and quality may be affecting marginalized people in remote areas. In some places, all of the above coincide.”

**World Economic Forum | [How Cities Can Avoid the Water Crisis](#)**

“A region’s laws and policies matter when water supplies shrink to the point where there is not enough for all demands. Then water allocation becomes political. [...] There are deeper shades of complexity when looking at the constituencies within cities. [For example,] London, which appears on some water risk lists because of population growth in southeast England and increasing dryness, has essentially universal piped drinking water service. Karachi, on the other hand, also faces severe water supply constraints. But even on a good day, supply in Karachi currently does not meet demand. Many residents do not have in-home water.”

### Local and State Clean Water and Environment Organizations & Programs

**Franklin Park Conservatory | [Outreach](#) Programs**

1. **Green Corps:** The Franklin County Green Corps Jobs Program provides horticulture and landscaping training to eligible adults, ages 18–24, interested in obtaining a career in the green, environmental and agricultural industries. Participants work side-by-side with employees at Franklin Park Conservatory and Botanical Gardens gaining skills in horticulture, landscape and garden maintenance and green practices.
2. **Growing to Green:** Growing to Green is Columbus’ largest organized effort to promote and provide free community resources for community gardening and city beautification. Initiated in March 2000, Growing to Green has assisted in the start-up or renovation of more than 250 community gardens throughout the central Ohio area. Growing to Green assists individuals and groups interested in starting a community garden, neighborhood beautification project, or a school learning garden.



**Ohio Water Resources Center** | <https://wrc.osu.edu/>

The Ohio Water Resources Center (WRC) enables and conducts (state-relevant) water resources research; fosters collaboration among academic investigators, governmental bodies and water professionals; trains the next generation of water scientists and educates the public on water resources issues in the State of Ohio.

The Ohio Water Resources Center (WRC) recently underwent a strategic planning exercise, which was an opportunity to step back and assess the Ohio WRC. Specifically, we looked at our national organization, the National Institutes for Water Resources (NIWR), The Water Resources Research Act, and other water centers and initiatives in Ohio to determine strategic directions and best opportunities for the Ohio WRC. The outcome is a set of six strategic goals and objectives to advance the Ohio WRC, along with metrics to measure our progress on these goals. Therefore, we will strive to:

1. Improve the Ohio WRC visibility at the state and national level
2. Enable investigators to compete for larger proposals
3. Foster development of investigators' research activities toward state-relevant water issues
4. Support innovative water technologies
5. Train future water professionals
6. Engage the public to be "water smart"

**Green Columbus** | <https://www.greenbus.org/>

“Green Columbus is a volunteer-led nonprofit dedicated to promoting sustainable living, environmental education, and community involvement. Building on the success of the first Earth Day Columbus in 2007, Green Columbus has engaged the Central Ohio community to contribute more than 100,000 hours of green citizen service. Earth Day Columbus is growing every year and is a staple in community engagement and beautification for Columbus. Every month, Green Columbus organizes Central Ohio Green Drinks, an informal meetup of local residents who care about the environment. Green Drinks typically take place at a local restaurant and feature remarks from environmental and sustainability leaders and educators.

**Columbus Zoo and Aquarium** | <https://globalimpact.columbuszoo.org/sustainability>

“At the Columbus Zoo and the Wilds, we take conservation seriously. Today we devote \$4million of privately raised funds to support conservation efforts annually around the world, most recently 70 projects in 30 countries. These privately raised funds are collected through Partners in Conservation (PIC), the Columbus Zoo and Aquarium and the Wilds. By providing resources and funds to local conservation leaders, PIC, the Columbus Zoo and the Wilds puts this money to work on the ground to advance conservation research, build capacity among local populations,

strengthen environmental education, promote community involvement, and foster behavior change benefits animals and people.”

The Zoo and Aquarium have an entire section on how to improve the environments sustainability; found [here](#).

### **Columbus Zoo and Aquarium | [Teen Eco Summit](#)**

This free program at the Columbus Zoo is a two-day summit for 100 high school students. The Teen Eco Summit combines inspiring guest speakers, DIY workshops and of course, cool animals! Students will leave this Summit with a Conservation Action Plan ready to be implemented at their school.

### **Be the Change for Clean Water | <http://www.bethechangeformcleanwater.org/>**

Be the Change exists to keep you informed about programs and services in Central Ohio and how they can benefit you.

“When it comes to protecting our water resources, we all need to be part of the solution. Be The Change for Clean Water is bringing together ten counties and a multitude of partners to provide education, resources, and opportunities to make it easier for all Central Ohio residents to Be the Change for Clean Water.

Whether you are concerned about water pollution, participate in outdoor recreation, interested in volunteering, want to protect local wildlife, wish to join community leaders in developing policies and programs, or need to know how to properly dispose of trash this site is for you. We can all do something to Be the Change for Clean Water.”

### **Water.org | [Ways to Start a Clean Water Fundraiser](#)**

“Turn passion into action, spread the word, and celebrate changed lives. Get creative and come up with a fundraising idea for you or your group.”

## Environmental Careers

### Top 10 Green Dream Jobs<sup>2</sup>

#### 1. Chief Sustainability Officer

A relatively new position, Chief Sustainability Officers serve as corporate champions of companies' environmental efforts. "Companies are monitoring the impact they're having environmentally and on society, and the appointment of the CSO reflects an underlying need for companies to not only monitor but also improve their performance," Harvard Business School associate professor George Serafeim tells Forbes.



#### 2. Leadership in Energy and Environmental Design

This position is the gold standard for environmental engineering and building. Architects, engineers, designers and other professionals can take the LEED Professional Exams and become certified.

#### 3. Environmental Lawyer

These lawyers advise clients on issues related to air and water quality hazardous waste, sustainability, and more. Some predict that this profession will continue to grow as climate change impacts the earth.

#### 4. Geoscientist

Some states require licensure for this job, which involves the study of the earth's composition, history, and natural resources. Geoscientists may work with environmental scientists and do their jobs both indoors (in offices and labs) and out (in the field). Travel is typically required in this job, which can take workers to both hot and cold climates.

#### 5. Environmental Engineer

These engineers advise governments and private companies on the best ways to minimize the environmental impact of their projects. They might work on recycling programs, public health policy, or plans to reduce air and water pollution.

<sup>2</sup> <https://www.thebalancecareers.com/top-green-dream-jobs-4154258>.



#### 6. Hydrologist

Hydrologists study water availability and quality, collecting data and using it to formulate plans to improve resources. They might work for government agencies or private companies, and they tend to split their time between the office and the field—which for a hydrologist, might mean waist-deep in lakes, rivers, and streams.



#### 7. Environmental Scientist

Environmental Scientists work for government agencies, consulting firms or other private companies, using their knowledge of natural sciences to inform policy that protects humans, animals, and the environment. Like many science careers, this one requires workers to split their time between the office and the field.

#### 8. Urban Farmer

Urban farmers utilize (or create) green space in vacant lots, backyards, even rooftops. Stats on urban farmers are hard to come by, but anecdotal evidence suggests this occupation is becoming more popular. In recent years, some condo developments have even hired their own on-staff urban farmer as a draw for potential buyers.

#### 9. Conservation Scientist

These scientists collect and analyze data to help manage parks and forests and protect the environment. They work with governments and landowners to improve land utilization without negatively impacting soil and water.

#### 10. Urban Planner

Two-thirds of Urban and Regional Planners worked for local government in 2014, per the Bureau of Labor Statistics. Urban Planners typically plan land use programs to help create and expand communities. This is an important role, especially in cities and towns that are experiencing high population growth.





*The True Cost* (2015)

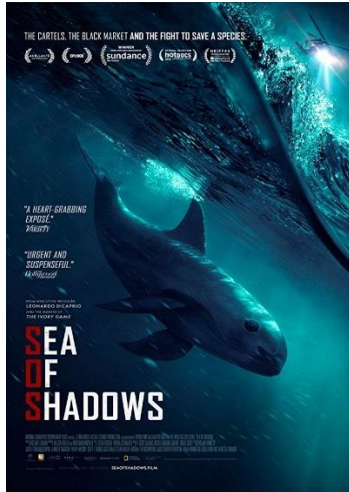
“This is a story about clothing. It’s about the clothes we wear, the people who make them, and the impact the industry is having on our world. The price of clothing has been decreasing for decades, while the human and environmental costs have grown dramatically. The True Cost is a groundbreaking documentary film that pulls back the curtain on the untold story and asks us to consider, who really pays the price for our clothing?”

Filed in countries all over the world, from the brightest runways to the darkest slums, and featuring interviews with the world’s leading influencers including Stella McCartney, Livia Firth and Vandana Shiva, The True Cost is an unprecedented project that invites us on an eye opening journey around the world and into the lives of the many people and places behind our clothes.”



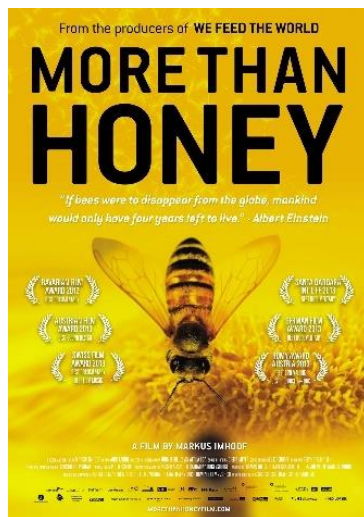
*An Inconvenient Sequel: Truth to Power* (2017)

“A sequel to “An Inconvenient Truth”, the follow-up documentary addresses the progress made to tackle the problem of climate change and Al Gore's global efforts to persuade governmental leaders to invest in renewable energy, culminating in the landmark signing of 2016's Paris Climate Agreement.”



### Sea of Shadows (2019)

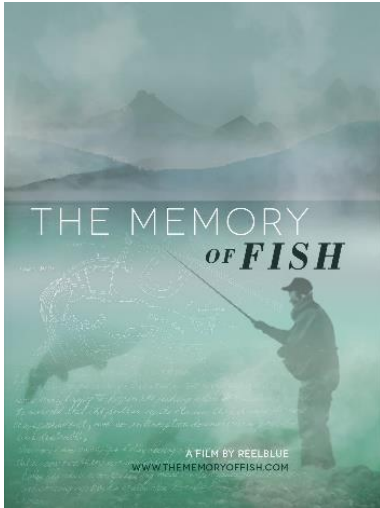
The vaquita, the world's smallest whale, is near extinction as its habitat is destroyed by Mexican cartels and Chinese mafia, who harvest the swim bladder of the totoaba fish, the "cocaine of the sea." Environmental activists, Mexican navy and undercover investigators are fighting back against this illegal multi-million-dollar business.



### More Than Honey (2013)

In the US, the latest estimates suggest that a total of 1.5 million (out of 2.4 million total beehives) have disappeared across 27 states. In Germany, according to the national beekeepers association, one fourth of all colonies have been destroyed, with losses reaching up to 80% on some farms. The same phenomenon has been observed in Switzerland, France, Italy, Portugal, Greece, Austria, Poland and England, where this syndrome has been nicknamed 'the Mary Celeste Phenomenon', after a ship whose crew vanished in 1872.

Scientists have found a name for the phenomenon that matches its scale, 'colony collapse disorder,' and they have good reason to be worried: 80% of plant species require bees to be pollinated. Without bees, there is no pollenization, and fruits and vegetables could disappear from the face of the Earth. Apis mellifera (the honey bee), which appeared on Earth 60 million years before man and is as indispensable to the economy as it is to man's survival."



### The Memory of Fish (2016)

“The Memory of Fish’ is an award-winning documentary portrait of one man, the wild salmon he loves, and his fight to free a river.

Dick Goin and his family have been fed by the Elwha River's salmon since migrating to Washington's Olympic Peninsula during the Dust Bowl. Dick has never forgotten his debt to the fish — who have been steadily disappearing.

A pulp mill worker and master fisherman turned salmon advocate, Dick uses his memories and persistence to battle for the biggest dam removal project in U.S. history. His goal: bring the salmon home.”

## Visual Artists Engaging with the Environment



Maya Lin (American, born 1959)

Artist, designer and **environmentalist**, [Maya Lin](#) interprets the natural world through science, history, politics, and culture, creating a remarkable and highly acclaimed body of work in art and architecture. Her works merge the physical and psychological environment, presenting a new way of seeing the world around us.

Lin's art explores how we experience and relate to Nature, setting up a systematic ordering of the land that is tied to history, memory, time, and language. Her interest in landscape has led to works influenced by **topographies** and **natural phenomena**.<sup>3</sup>

Though widely known for her Vietnam Veterans Memorial, Maya Lin entitles what she claims as her last memorial: “[What is Missing?](#)”<sup>4</sup>, “a nonprofit that blends art and science to raise awareness about the ongoing loss of **biodiversity** and **natural habitats**.”<sup>5</sup> In her work, Lin encourages individuals to reflect on the nature around them (e.g. their backyard or local park) in

<sup>3</sup> Artist’s Official Website: [Maya Lin](#).

<sup>4</sup> Official Website: [Interactive "What is Missing?" Memorial](#)

<sup>5</sup> Quoted in ["Q&A with Maya Lin on Saving the Planet Through Art"](#).

order to draw broader connections and awareness to the larger issues surrounding nature, climate and environment.



In the 2017 exhibition, *Maya Lin: Ebb and Flow*, Pace Gallery featured 11 new installations and sculptures that continue the artist's ongoing investigation of water in its different states. The exhibition includes wall and floor pieces made from recycled silver, glass marbles, steel pins, and marble.

"I've always been fixated on water," says Lin. "Maybe it's because it exists in multiple states, and you can never understand it in nature as a fixed

moment in time. The new show coming up at Pace is about the transitory state of water, and of the earth itself. I'm very interested in the shifting flux of things. And especially now with human development and climate change, the world is being altered at an incredible pace from rising seas, disappearing polar ice, to our major rivers and estuaries and how they have been changed by us. I wanted to capture some of those events: 'Can we stop time? Can we freeze a moment in something that is always in flux? Can I reveal aspects of the natural world that you may not even realize are shifting?'"

The works in *Ebb and Flow* map the water at Victoria Falls, in the Nile River, the Arctic, and the Antarctic and translate its presence into humanly scaled comprehensible forms. The exhibition includes two new Silver River works depicting the Nile and Columbia Rivers. Using recycled silver, Lin evokes water through the silver's smooth and reflective qualities, and symbolically portrays a finite resource with a recycled material. In other works, such as *Where the Water Flows North* (2017) Lin uses steel pins set into the gallery wall to create a three-dimensional drawing that illustrates the dispersion and movement of waterways. Drawn together, the new works reflect Lin's ongoing interest in capturing the different states and constant flux of our world's most essential element.

An installation of Lin's steel pins is now on display at the Wexner Center for the Arts for the upcoming exhibition *Here: Ann Hamilton, Jenny Holzer, Maya Lin*.

## My Modern Met | [Six Environmental Artists Who Celebrate Nature](#)

“The environmental art movement emerged in the 1960s and early 1970s and primarily celebrates the artist’s connection with nature. Pioneers of the movement such as Nils-Udo became famous for creating site-specific sculptures and installations from found natural materials, then documenting his works with photography. While earlier artists such as Udo celebrate the beauty of nature, many of today’s artists are using a wide range of media, techniques and styles to address social issues and the negative impact we as human beings are having on our planet.” Artists include Nils-Udo, Andy Goldsworthy, Richard Shilling, Agnes Denes, Chris Jordan, and Benjamin von Wong.

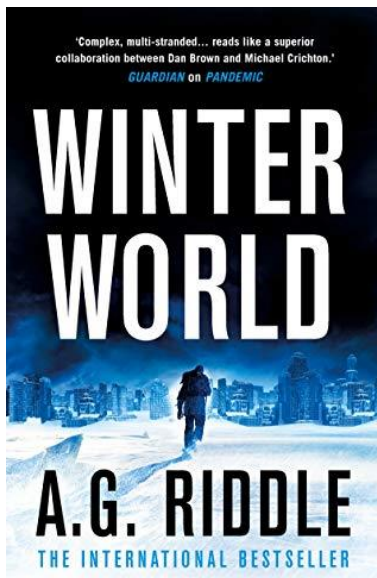


## Relevant Literature: Young Adult



### Lost Objects by Marian Womack

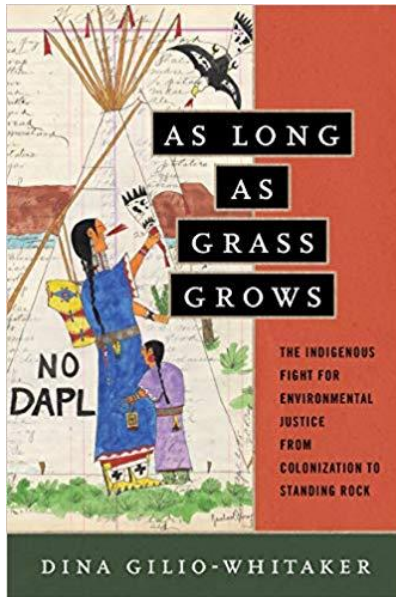
“An intriguing and illuminating first collection, chockfull of interesting ideas about the natural world and ourselves.” These stories explore place and landscape at different stages of decay, positioning them as fighting grounds for death and renewal. From dystopian Andalusia to Scotland or the Norfolk countryside, they bring together monstrous insects, ghostly lovers, soon-to-be extinct species, unexpected birds, and interstellar explorers, to form a coherent narrative about loss and absence.



### Winter World (2019) by A.G. Riddle

In space, NASA discovers a mysterious object drifting toward the sun. Is it responsible for the ice age? Or could it be our last chance of stopping it? With time running out, an international consortium launches a mission to make contact with the artifact. But it isn't what anyone thought. Humanity faces a new kind of threat--and an event that will change the future forever. Each month, it grows colder. Snow falls in summer. Glaciers trample cities across North America, Europe, and Asia. The new ice age gripping the Earth shows no signs of stopping. Chaos erupts. Around the world, people abandon their homes, fleeing the cold, flocking to regions where they can survive. Nations prepare to go to war for the world's last habitable zones.



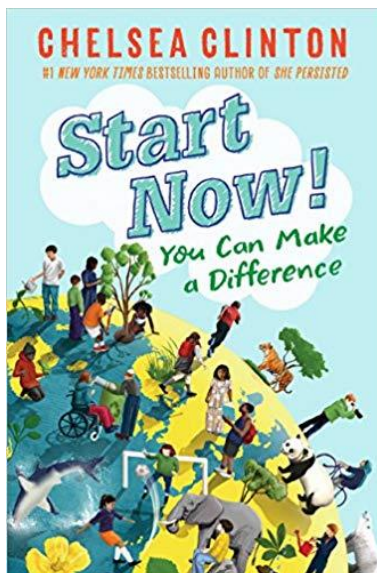


As Long as Grass Grows: The Indigenous Fight for Environmental Justice, from Colonization to Standing Rock (2019)

by Dina Gilio-Whitaker

Through the unique lens of “Indigenized environmental justice,” Indigenous researcher and activist Dina Gilio-Whitaker explores the fraught history of treaty violations, struggles for food and water security, and protection of sacred sites, while highlighting the important leadership of Indigenous women in this centuries-long struggle. *As Long As Grass Grows* gives readers an accessible history of Indigenous resistance to government and corporate incursions on their lands and offers new approaches to environmental justice activism and policy.

Throughout 2016, the Standing Rock protest put a national spotlight on Indigenous activists, but it also underscored how little Americans know about the longtime historical tensions between Native peoples and the mainstream environmental movement. Ultimately, she argues, modern environmentalists must look to the history of Indigenous resistance for wisdom and inspiration in our common fight for a just and sustainable future.

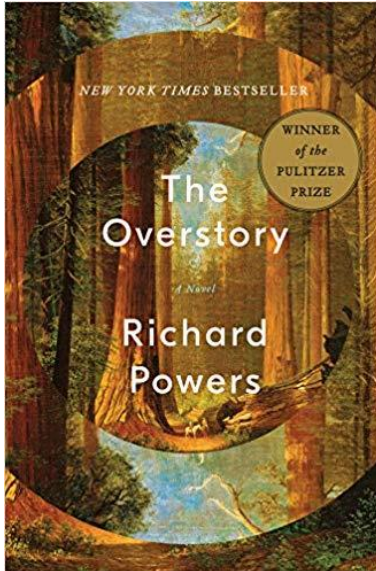


Start Now!: You Can Make a Difference (2018) by Chelsea Clinton

What can I do to help save endangered animals? How can I eat healthy? Why do I need to cover my mouth when I cough? What do I do if I'm being bullied?

With information on problems both large and small, Chelsea Clinton breaks down the concepts of health, hunger, climate change, endangered species and bullying, so that readers can understand the world around them, and how they can make a difference in their own lives, as well as in their communities and the world at large. With comic drawings to illustrate Clinton's words, photographs of real live kids who are making a difference today, and lists of ways to get involved, this book is the perfect

introduction to young activists who want to make the world a better place. A book equally important and welcome for any elementary school kid, the Cub Scout and Girl Scout set, and for moms who want to raise socially active children.



The Overstory: A Novel (2018) by Richard Powers

This Pulitzer Prize winning novel about an Air Force loadmaster in the Vietnam War is shot out of the sky, then saved by falling into a banyan. An artist inherits a hundred years of photographic portraits, all of the same doomed American chestnut. A hard-partying undergraduate in the late 1980s electrocutes herself, dies, and is sent back into life by creatures of air and light. A hearing- and speech-impaired scientist discovers that trees are communicating with one another. These four, and five other strangers—each summoned in different ways by trees—are brought together in a last and violent stand to save the continent’s few remaining acres of virgin forest.

In his twelfth novel, National Book Award winner Richard Powers delivers a sweeping, impassioned novel of activism and resistance that is also a stunning evocation of—and paean to—the natural world.

*The Overstory* is a book for all readers who despair of humanity’s self-imposed separation from the rest of creation and who hope for the transformative, regenerating possibility of a homecoming. If the trees of this earth could speak, what would they tell us? *"Listen. There’s something you need to hear."*

Relevant Literature: Background & Thematic

The  
Uninhabitable  
Earth  
*Life After Warming*  
David  
Wallace-Wells



The Uninhabitable Earth: Life After Warming (2019)

by David Wallace-Wells

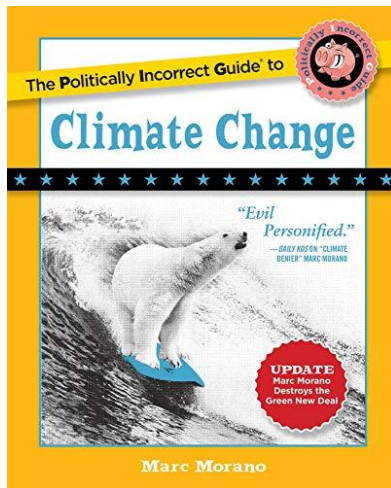
It is worse, much worse, than you think. If your anxiety about global warming is dominated by fears of sea-level rise, you are barely scratching the surface of what terrors are possible. In California, wildfires now rage year-round, destroying thousands of homes. Across the US, “500-year” storms pummel communities month after month, and floods displace tens of millions annually.

This is only a preview of the changes to come. And they are coming fast. Without a revolution in how billions of humans conduct their

lives, parts of the Earth could become close to uninhabitable, and other parts horrifically inhospitable, as soon as the end of this century.

In his travelogue of our near future, David Wallace-Wells brings into stark relief the climate troubles that await—food shortages, refugee emergencies, and other crises that will reshape the globe. But the world will be remade by warming in more profound ways as well, transforming our politics, our culture, our relationship to technology, and our sense of history. It will be all-encompassing, shaping and distorting nearly every aspect of human life as it is lived today.

Like *An Inconvenient Truth* and *Silent Spring* before it, *The Uninhabitable Earth* is both a meditation on the devastation we have brought upon ourselves and an impassioned call to action. For just as the world was brought to the brink of catastrophe within the span of a lifetime, the responsibility to avoid it now belongs to a single generation.

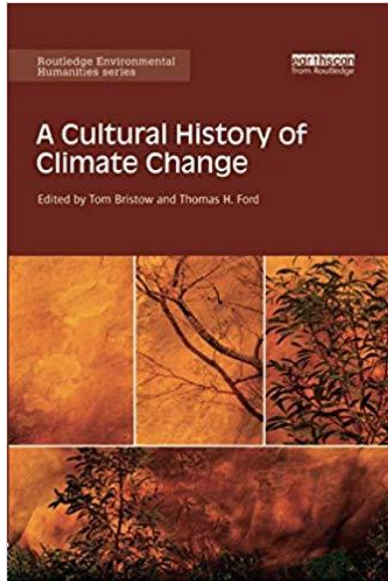


### The Politically Incorrect Guide to Climate Change (2018)

By Marc Morano

Less freedom. More regulation. Higher costs. Make no mistake: those are the surefire consequences of the modern global warming campaign waged by political and cultural elites, who have long ago abandoned fact-based science for dramatic fearmongering in order to push increased central planning. *The Politically Incorrect Guide to Climate Change* gives a voice --

backed by statistics, real-life stories, and incontrovertible evidence -- to the millions of "deplorable" Americans skeptical about the multibillion dollar "climate change" complex, whose claims have time and time again been proven wrong.



### A Cultural History of Climate Change (2017)

by Tom Bristow and Thomas Ford

Charting innovative directions in the environmental humanities, this book examines the cultural history of climate change under three broad headings: history, writing and politics. Climate change compels us to rethink many of our traditional means of historical understanding, and demands new ways of relating human knowledge, action and representations to the dimensions of geological and evolutionary time. To address these challenges, this book positions our present moment of climatic knowledge within much longer histories of climatic experience. Only in light of these histories, it argues, can we properly understand what climate means today across an array of discursive domains, from politics, literature and law to neighbourly conversation. Its chapters identify turning-points and experiments in the construction of climates and of atmospheres of sensation. They examine how contemporary ecological thought has repoliticised the representation of nature and detail vital aspects of the history and prehistory of our climatic modernity.

This ground-breaking text will be of great interest to researchers and postgraduate students in environmental history, environmental governance, history of ideas and science, literature and eco-criticism, political theory, cultural theory, as well as all general readers interested in climate change.